Data Sheet

Cisco BTS 10200 Softswitch

Telecommunications innovators recognize the opportunities made possible by migrating from time-division multiplexing (TDM)-switched voice telephony to packet-based networks. The Cisco® BTS 10200 Softswitch meets the high-quality and reliable packet voice requirements of a softswtich network, providing call-control intelligence for establishing, maintaining, routing, and terminating voice calls. It serves as an interface to enhanced, converged voice-and-data services and application platforms such as voicemail and unified messaging.

Taking advantage of the power and flexibility of packet-based networks while operating with traditional circuit-switched infrastructures, the Cisco BTS 10200 Softswitch empowers service providers and carriers to gracefully transition to packet-based technology. Implementing the Cisco BTS 10200 Softswitch helps ensure rapid service deployment, carrier-grade reliability, service flexibility, scalability to millions of subscribers, and cost savings through operational efficiencies and investment optimization.

The Cisco BTS 10200 Softswitch incorporates a comprehensive feature set, including call control for local voice services that previously required the implementation of large, complex telephone switches. Compared to traditional switching systems, the Cisco BTS 10200 Softswitch gives service providers and their subscribers significant savings in equipment and transmission costs, space, and the required time to deploy services. The Cisco BTS 10200 is a class-independent softswitch, supporting applications for local and transit services and Signaling System 7 (SS7) Primary Rate Interface (PRI) and TDM offload. Multiple country-specific SS7 variants and access types (cable, T1/E1, DSL and others) are supported.

The Cisco BTS 10200 Softswitch offers tremendous flexibility to service providers that want to deploy local services. It serves as the ideal platform for:

- Cable operators
- Startup local services carriers
- Resellers moving to facilities-based services
- Facilities-based competitive local exchange carriers (CLECs)
- Fixed-wireless carriers

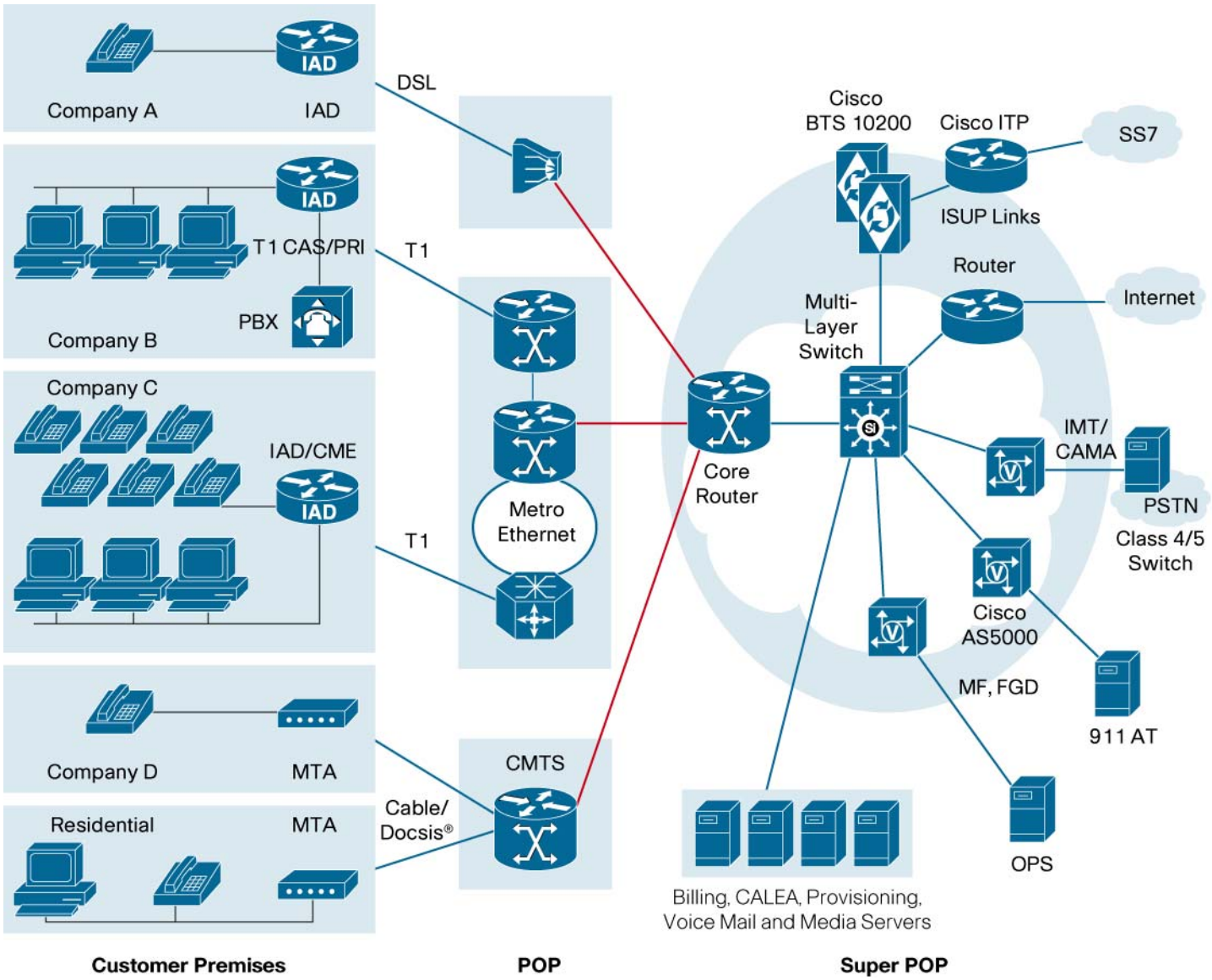
The Cisco BTS 10200 Softswitch provides service providers the following advantages:

- One network, one transport protocol, and multiple services (voice, video, and data)
- Increased revenue, profits, and customer loyalty by delivering additional services over an existing infrastructure
- Fast deployment of advanced services such as voice messaging and video services
- Proven, industry-leading network components for reliable, scalable, carrier-class packet networks
- Structured architecture for flexible, high-performance network services
- Pure packet-based network infrastructure, reducing the operating costs required to run multiple networks

SOLUTIONS ENABLED BY THE CISCO BTS 10200 SOFTSWITCH

The foundation for several voice solutions from Cisco Systems®, the Cisco BTS 10200 Softswitch is deployed globally by broadband providers that are offering services such as residential primary and secondary line over broadband, and converged voice and data services to business clients. The Cisco BTS 10200 allows service providers to deliver multiple services over a common broadband access network, expanding their market potential. Cisco helps service providers deliver packet-based local telephony services to their end customers over the same access network that simultaneously delivers data and video services. Cisco BTS 10200 solutions are supported over several broadband access networks, including cable, DSL, Metro Ethernet, and T1/E1 (refer to Figure 1).

Figure 1. Cisco Network Configuration for Broadband Local Services



The standards-based Cisco BTS 10200 Softswitch helps enable new, innovative, easily differentiated services for a fortified broadband services offering. Services can be quickly deployed without requiring time-consuming and costly upgrades to each transport element—the Cisco BTS 10200 Softswitch extracts and centralizes the call-control and service applications from the transport network. In addition to telecommunications services, service providers can offer a wider range of other business and residential services, including multiservice VPNs, Web hosting, and Internet access. These content-rich services not only improve overall customer satisfaction and enhance customer loyalty, but also result in increased online time for subscribers.

Bundling gives the service provider more account control and allows subscribers to benefit from a single, comprehensive invoice for all their telecommunications needs. A bundled data and voice service offering delivered over a single, integrated multiservice packet network translates into lowered total cost of network ownership, increased revenue per customer, access to new markets, reduced customer turnover, and deepened relationships with existing subscribers.

The Cisco BTS 10200 is integrated with proven network components, structured network architectures, and tight integration and testing of network elements to deliver innovative and profitable solutions.

Cisco Cable Multimedia Communications Solution

TheCisco Cable Multimedia Communications Solution delivers packet voice and data services designed to meet CableLabs® PacketCable requirements. The PacketCable initiative has defined specifications for solutions to deliver advanced, real-time multimedia services over a two-way cable network for North American multiservice operators (MSOs). PacketCable standards are also being adapted for Europe.

Cisco has supported and remains actively involved with both CableLabs and the PacketCable initiative. The Cisco BTS 10200 Softswitch was one of the first products to receive PacketCable 1.0 qualification in CableLabs Certification Wave 25, April 11, 2003. The Cisco BTS 10200 Softswitch and the Cisco uBR10012 Universal Broadband Router now join the Cisco uBR7246VXR, PacketCable 1.0 qualified at CableLabs. in Certification Wave 24, as an elite group of products to have passed the rigorous tests.

The Cisco Cable Multimedia Communications Solution reflects this ongoing commitment and provides a multiservice voice-over-cable solution—available today—that meets the needs of MSOs looking to increase their revenue by offering additional services.

Broadband Local Services for Commercial Customers

The Cisco broadband local services solution for commercial customers helps service providers deliver data, voice, and video over a variety of access networks. Using existing access lines, the solution helps service providers offer a bundle of packet-based services, including local and long-distance voice services and high-speed data. By providing multiple services over a common infrastructure, a carrier can increase its revenue and profits, while offering small and medium-sized business (SMBs) customers a better telecommunications value. This solution is especially well suited for serving SMB customers over traditional T1/E1 access infrastructure. Additionally, in a metropolitan area where Metro Ethernet fiber-optic networks are generally available, the solution delivers always-on 10-/100-Mbps Ethernet connections to each user, supporting data (Internet, LAN interconnect, and VPNs), voice (basic and supplementary), and video (conferencing, on-demand, and broadcast) services. The solution has also been implemented over additional broadband access networks, including DSL, cable, and fixed wireless. Since 2001, Cisco BTS 10200-based solutions for SMBs have been successfully deployed worldwide over a variety of access methods.

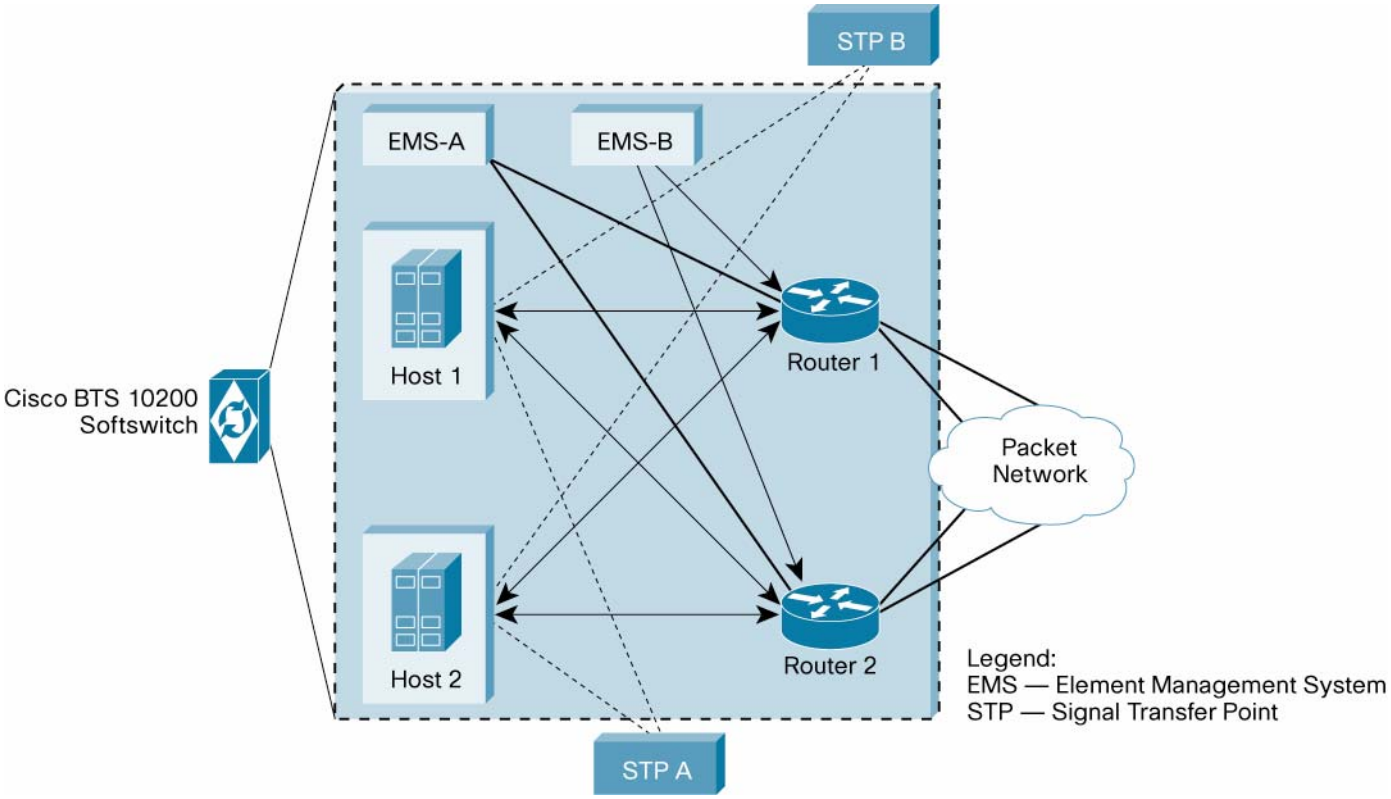
CISCO BTS 10200 SOFTSWITCH ARCHITECTURE AND COMPONENTS

The Cisco BTS 10200 Softswitch helps enable IP connections to the public switched telephone network (PSTN) using SS7, H.323, Media Gateway Control Protocol (MGCP), and Session Initiation Protocol (SIP) standards. The system integrates call-control and services software on an open UNIX platform. All Cisco BTS 10200 Softswitch equipment and paths are fully redundant with an architecture that eliminates single-point failures and is designed for 99.999-percent reliability. The Cisco BTS 10200 Softswitch delivers the call-throughput capabilities required for even very large subscriber bases.

Three elements comprise the Cisco BTS 10200 Softswitch (Figure 2):

- The call agent component serves as a call management system and media gateway controller. Each Cisco BTS 10200 Softswitch system incorporates multiple call agents to handle capacity and redundancy requirements.
- The element management system (EMS) serves as a mediation device between a network management system (NMS) and one or more call agents. The EMS facilitates the provisioning, administration, reporting, and billing features of the Cisco BTS 10200 Softswitch. Cisco Extensible Provisioning and Operations Manager (EPOM) is a Web-based GUI in the Cisco BTS 10200 EMS that saves operator time and simplifies Cisco BTS 10200 provisioning through the use of wizards. Cisco EPOM facilitates other repetitive tasks (adding subscribers, for example) by eliminating redundant steps and duplication of effort. Cisco EPOM optimizes user productivity by providing online access to EMS documentation, allowing traversal of different configuration items, views into the status of the provisioned media gateways, and user group administration security. The Cisco Self-Service Phone Administration (Cisco SPA) is an add-on product to the Cisco BTS 10200 Softswitch that allows phones to be organized into accounts and managed by nonservice personnel. This setup reduces service provider costs while enhancing the user's product experience. When the service provider has installed Cisco SPA and configured it by using the Cisco SPA operation and configuration tool, all that remains is creating accounts for users to manage their own phones. The Cisco SPA GUI interface is designed to be self-explanatory, and specific user tasks are accomplished by navigating the windows and consulting the help files that are included.
- The feature server provides an open protocol and flexible framework for the introduction of new and innovative features into the network, allowing service providers to take advantage of multivendor products. It provides various basic telephone service and Centrex, tandem, and Advanced Intelligent Network (AIN) services to the calls controlled by the call agents. It also processes features such as call forwarding and call waiting.

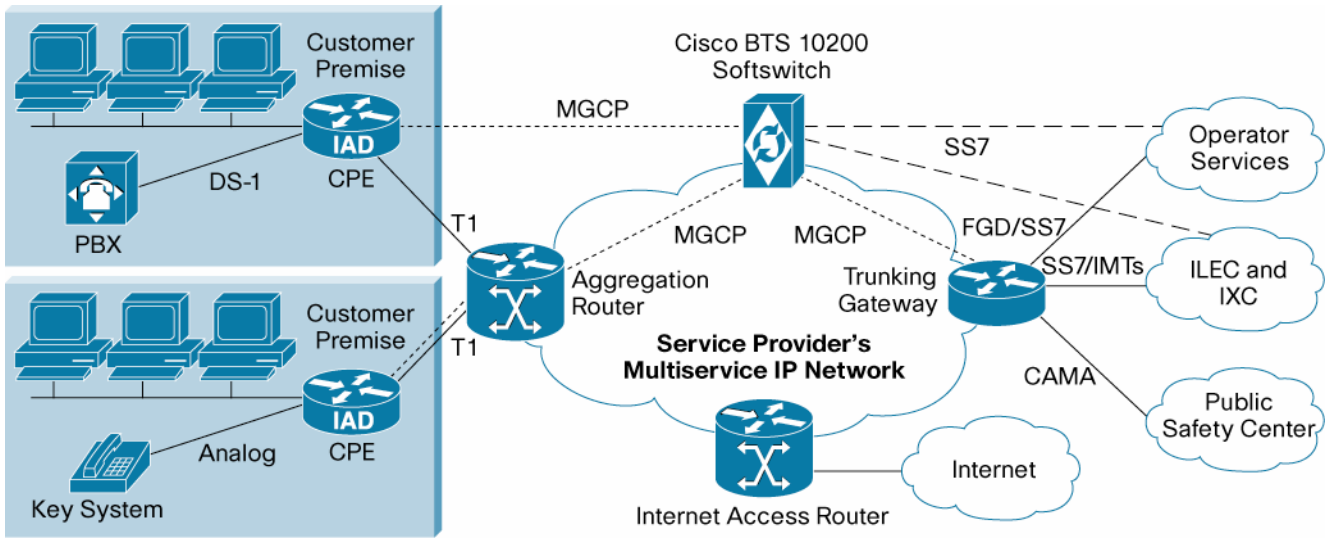
Figure 2. Cisco BTS Softswitch Elements



Built-In Redundancy Ensures Efficient Call Management and High Availability

The Cisco BTS 10200 Softswitch supports real-time maintenance and provisioning plus automated interfaces for service integration. It requires no product customization to interoperate with public and multivendor infrastructures (Figure 3). By taking advantage of open protocols in both directions—up to the feature server and down to the transport server—the Cisco BTS 10200 Softswitch is well suited to multivendor infrastructures.

Figure 3. The Cisco BTS 10200 Softswitch Empowers Service Providers to Deliver Advanced Services and Applications to Subscribers



The Cisco BTS 10200 Softswitch provides detailed reporting information for billing and quality-of-service (QoS) requirements. Thorough call detail records (CDRs) are generated for every call. Each CDR includes QoS metrics such as jitter and average packet latency. Traffic data is collected at regular intervals during the day and the collected data is kept for two days for ensured protection. Users can choose from either the Cisco EPOM GUI or the command-line interface (CLI)—both provide intuitive system setup and administrative capabilities.

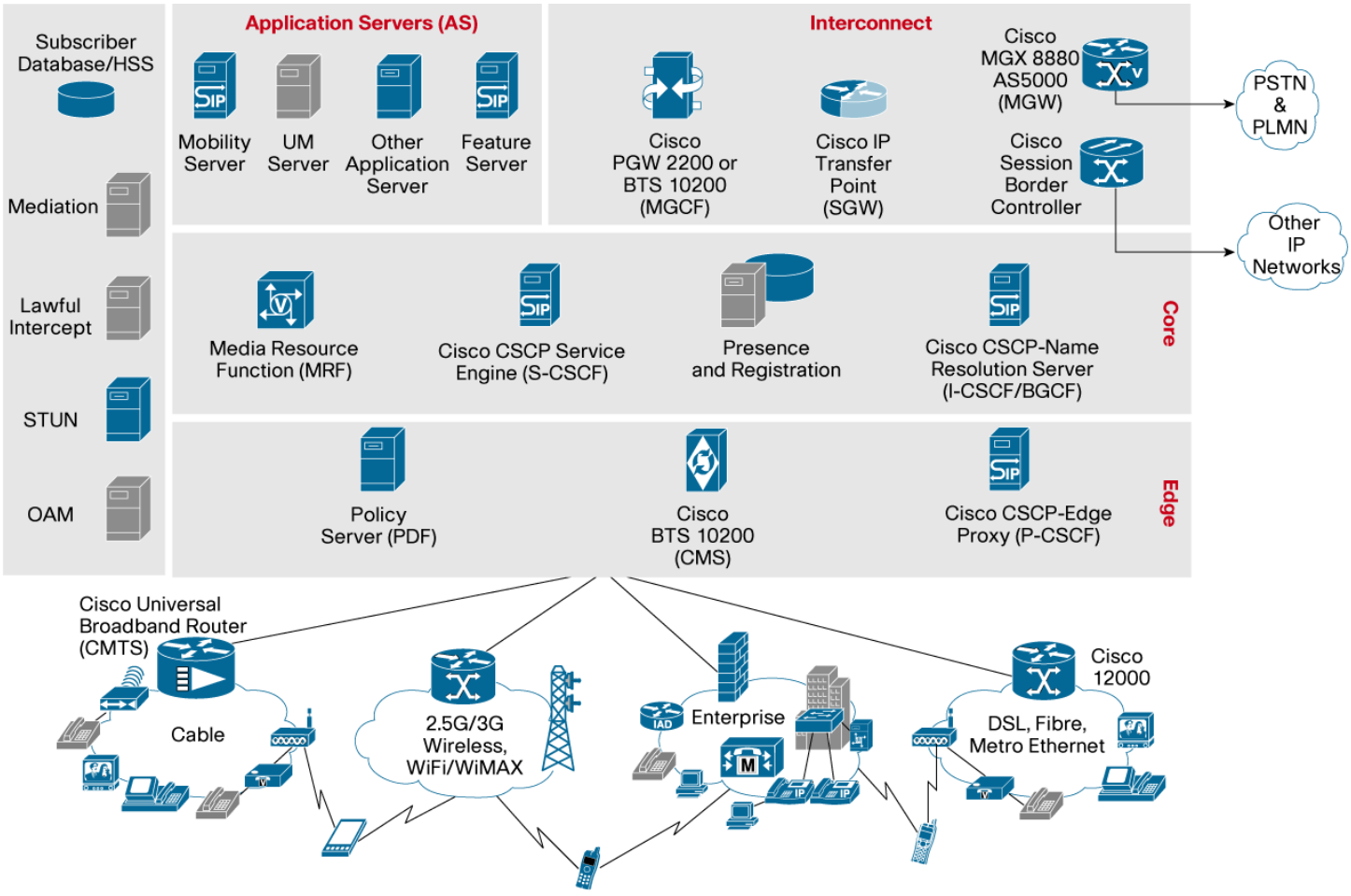
Cisco Solution for Next-Generation Multimedia Communications Services

Cisco has developed the Cisco IP Next-Generation Network (IP NGN) architecture to address the broad sweeping transformation of a service provider's network and business. The Cisco IP NGN architecture is focused around three primary areas of convergence to provide rich, personalized, value-add multimedia services: an application layer that interfaces with the customer, a secure network layer that creates and delivers the services, and in between, a service control layer that orchestrates the delivery, operations, features, and billing of the service itself. Within the Cisco IP NGN architecture, Cisco has developed the Service Exchange Framework (SEF), a set of enabling technologies that allow service providers to deliver today's voice, video, and data services more efficiently while accommodating the delivery of new rich multimedia services. The SEF provides enhanced subscriber and application awareness in the network, allowing network operators to capture and analyze granular details about their subscribers, what services they are using and how they are using them, and how valuable and finite network resources are being allocated to support this usage.

The Cisco Service Exchange Solution for IMS enables service providers to generate revenue by offering their subscribers ubiquitous access over any network to a complete array of real-time, multimedia business and consumer services, such as "triple play," push-to-talk, presence-based services, video telephony, and fixed and mobile convergence. Service providers can allow subscribers to easily personalize and select their own multimedia services, while retaining control of billing and usage options.

At the heart of the Cisco Service Exchange Solution for IMS are the call and session control solutions, which provide the services intelligence for establishing, maintaining, routing, integrating, and terminating voice and multimedia services. The Cisco BTS 10200, along with the Cisco Call Session Control Platform and the Cisco PGW 2200 Media Gateway Controller are the platforms that serve as the interface to enhanced, converged voice-and-data services and application platforms such as voicemail, unified messaging, mobility services, and other application servers. Furthermore, these platforms provide the critical interconnection for voice and multimedia services between the traditional TDM world and the IP packet domain. Figure 4 shows a detailed view of the solution.

Figure 4. Cisco Service Exchange Solution for IMS



CONVERGED VOICE AND DATA NETWORK ADVANTAGES

The Cisco BTS 10200 Softswitch allows carriers to introduce converged communications services while cutting costs, through the implementation of a single platform that efficiently supports many nonsegregated types of traffic. The switch combines an innovative architecture, an open platform and interfaces, and the ability to operate in a multivendor network. Some important platform features and benefits are outlined in Tables 1, 2, and 3.

Table 1. Cisco BTS 10200 Softswitch Features and Benefits

Feature	Benefit
Comprehensive Industry-Standard Protocol Support	Seamless integration with the PSTN and multivendor voice and data networks; enables implementation of best-of-breed network components
Carrier-Grade Reliability with Network Building Systems (NEBS) Compliance and Redundant Platform Components	Telephony-grade quality with the flexibility of packet-switched technology
PacketCable Qualified	Reduced operating expense from fast integration with other qualified components
Interoperable with Numerous Commercial Feature Servers	Fast deployment of advanced services
Feature Server Architecture, which Provides an Open Protocol	Rapid development and deployment of lucrative customized services
Streamlined Maintenance, Provisioning, and Service Activation	Reduced operational costs
Integrated Access Device Support	Reduced subscriber costs with single-line delivery and billing for voice and data services; provides flexible bandwidth allocation to meet varying or peak traffic demands
GUI and Command-Line Interface (CLI)	Easy operation with Cisco EPOM GUI wizards, which allow the user to step through provisioning and consolidate or eliminate redundant transactions
Comprehensive Reporting Features, Including Billing Records	Sophisticated billing capabilities and integration with standard billing systems
Network Scalability through Deployment of Multiple, Centrally Managed Call Agents	Economical startup deployments and flexible expansions to support growing subscriber bases and services; reduced infrastructure costs
Graceful Migration to IMS Standards	Investment protection by starting with SIP voice-over-IP (VOIP) services and migrating to rich multimedia services with complementary feature servers and session control products

Table 2. Cisco Voice Advantages

Cisco Packet Voice Network Advantage	Evidence
High-Quality, Reliable Packet Voice	• Leader in voice quality as evidenced by industry reports • Existing large, successful networks based on Cisco solutions, including examples of networks that transport more than 1 billion packet-based telephony minutes yearly • Most experience in building and managing packet networks • Support for several QoS techniques
Open Standards and Worldwide Interoperability and Compatibility	• Largest, most geographically diverse customer base • Support for multiple protocols and transmission technologies (IP, ATM, and Frame Relay; and H.323, MGCP, and SIP) • A “reference standard” for many interoperability tests such as the Mier report • PSTN interoperability (SS7 connectivity and local signaling variants)

Cisco Packet Voice Network Advantage	Evidence
Industry Leader with the Broadest Product Offering	• Voice products in every segment • Market-share leader in most categories • Best-of-breed products • Strategic commitment to all markets • End-to-end solutions • Corporate size and financial stability
Easy and Rapid Service Creation and Deployment	• Numerous best-in-class applications through extensive partner programs • Open platform • Tools for third-party development • More overall IP service offerings
More Tools for Service Provider Success	• Cisco Service Carrier Community initiative • Cisco Powered Network program • Cisco Service Acceleration Joint Marketing program • Cisco Customer Advocacy services and support

Table 3. Technical Features and Specifications

Technical Features	Specifications
Call Model	ITU-CS2 model
Numbering Plan	One 10-digit North American Numbering Plan (NANP), support service codes (N11), private numbering plan, and ITU-T E.164 dial plan
Provisioning	Cisco EPOM Web-based GUI, Cisco SPA, Secure Shell (SSH) Protocol, Secure FTP (SFTP)
Management	Simple Network Management Protocol Version 2 (SNMPv2) agent, Common Object Request Broker Architecture (CORBA), CLI
Software and Billing Interface	PacketCable EM, SFTP, FTP, and third -party mediation

The Cisco BTS 10200 Softswitch allows service providers to offer basic voice services and business group services. Table 4 lists some of the services implemented in the Cisco BTS 10200 Softswitch.

Table 4. Services

Category	Services
Basic Subscriber Features	• Call forwarding unconditional • Call forwarding on busy • Call forwarding on no answer • Call forwarding combined • Call waiting • Cancel call waiting • Call waiting deluxe • Three-way calling

Category	Services
	• Usage-sensitive three-way calling • Three-way calling deluxe • Call block—Reject caller • Call transfer • Customer-originated call trace • Multiple directory numbers (teen service) • Soft dial tone • Calling number delivery • Calling number delivery blocking • Calling name delivery • Calling name delivery blocking • Calling identity delivery and suppression • Calling line identification presentation • Calling line identification restriction • Calling identity delivery on call waiting • Calling identity delivery blocking • Call identity suppression per call
Enhanced Subscriber Features	• Anonymous call rejection • Automatic callback (repeat dialing) • Automatic recall (call return) • Hotline service • Hotline variable service (warm line) • Do not disturb • Multiline hunt group • Selective call forwarding • Selective call rejection • Selective call acceptance • Remote activation of call forwarding • Remote call forwarding • Speed dial (8 and 30) • Limited call duration service with RADIUS interface to authentication, authorization, and accounting (AAA) • Message waiting indication • No solicitation announcement • Own calling number announcement • Privacy screening with third-party announcement server • Subscriber-controlled services and screening list editing • Voicemail • Voicemail always

Category	Services
	• Visual message waiting indication • Outgoing call barring

The next major Cisco BTS 10200 release will offer the following new features:

- Architecture evolution toward 3rd Generation Partnership Program (3GPP) IMS and PacketCable 2.0 (optional)
- Call management server (CMS) and media gateway controller (MGC) physical separation
- Cisco BTS 10200 acting as an application server for the Cisco Call Session Control Platform (SCP) in the Cisco Service Exchange Solution for IMS
- IMS Service Control (ISC) interface to Application Servers (AS)
- Inter-CMS Routing through the Cisco CSCP Name Resolution Server (CSCP-NRS)
- Geographic redundant Cisco CMS or BTS application servers
- Additional software upgrade enhancements
- Alarm enhancements
- Autorestart after node failure
- Overload control enhancements
- Communications Assistance for Law Enforcement Act (CALEA) IO4
- Bulk audit per RFC 3264
- Platform audit enhancements
- Alarm subsystem enhancements
- SIP offer and answer

To support today's multivendor networks, several signaling protocols are implemented in the Cisco BTS 10200 Softswitch (Table 5).

Table 5. Protocol Support

Protocol	Description	Reference Number	Organization
MTP	SS7 and Message Transfer Part (MTP)	• T1.111/GR-246 • Q701	• ANSI and Telcordia • ITU • ETSI
SCCP	SS7 and Signaling Connection Control Part (SCCP) functional description	• T1.111/GR-246 • Q.716	• ANSI and Telcordia • ITU • ETSI
TCAP	SS7 and Transaction Capability Application Part (TCAP) or Application of Intelligent Network Application Protocols (INAP) CS1 for UPT Service Set 1	• T1.111/GR-246 • Q.1551	• ANSI and Telcordia • ITU • ETSI
AIN 0.1	AIN 0.1 SCP application protocol interface generic requirements	TR-NWT-001285	Telcordia
AIN 0.1 SSP	AIN 0.1 Switching Systems Protocol (SSP) generic requirements	TR-NWT-001284	Telcordia
AIN Toll-Free	Switching and signaling generic requirements for toll-free service using AIN	GR-2892	Telcordia

Protocol	Description	Reference Number	Organization
IN/1 Toll-Free	Service switching points; toll-free service	GR-533-CORE	Telcordia
TCAP CNAM	Custom local area signaling services (CLASS) feature: Calling Name Delivery (CNAM) generic requirements	GR-1188-CORE	Telcordia
LNP	Local number portability (LNP)	T1S1.6 TR2	ATIS
ISUP	SS7, ISDN User Part (ISUP)	• T1.113/GR-246 • TU Q761 • ITU Q767 • ETSI, China, Thailand, Hong Kong, Mexico, Chile, Israel, Australia, Hungary, Colombia, and Argentina	• ANSI and Telcordia • ITU • ETSI
ISUP	LSSGRLATA switching systems generic requirements: Switching system generic requirements for call control using ISUP	GR-317	Telcordia
ISUP Feature Group D (FGD) (IXC interconnection)	LSSGR: Switching system generic requirements for interexchange carrier (IXC) interconnection using the integrated services digital user part (ISDNUP)	GR-394	Telcordia
ISDN L3 NI2	ISDN PRI call-control switching and signaling generic requirements for Class II equipment	TR-NWT-001268, SR-4994	Telcordia
ISUP-PRI Interworking	Switching system requirements supporting ISDN access using ISUP	TR-NWT-000444, T1.609	Telcordia and ANSI
MGCP	Media Gateway Control Protocol (MGCP) versions 1.0 and 0.1	RFC2705 (Draft-huitema-MGCP-v0r1.txt)	IETF
NCS	Network-Based Call Signaling Protocol (NCS)	Pkt-sp-ec-mgcp-i02-991201	CableLabs
SIP	Session Initiation Protocol (SIP)	• RFC 2617 • RFC 3261 • RFC 3263 • RFC 3265 • RFC 3311 • RFC 3398 • RFC 2976	IETF
SIP-T	SIP for Telephony (SIP-T): Context and architectures	RFC 3372	IETF
Analog DID	Analog direct inward dialing (DID)	TIA/EIA-464-B, TR-TSY-000524	ANSI and Telcordia
Bell-I, Bell-II	Operator services signaling; also applicable for 911 services	TR-NPL-000258, OSSGR FR-271	Telcordia
CAS	Channel associated signaling (CAS) (multifrequency/dual-tone multifrequency [DTMF] trunk)	TR-NPL-258, GR-506	Telcordia
CORBA	Common Object Request Broker Architecture (CORBA)	Version 2.3	OMG
SNMP	Simple Network Management Protocol (SNMP)	Version 2c	IETF
H.323	Packet-based and multimedia communications system	H.323 versions 2, 3, and 4	ITU

Protocol	Description	Reference Number	Organization
PacketCable	PacketCable Audio/Video Codecs Specification	PKT-SP-CODEC-I05-040113	CableLabs
	PacketCable Dynamic Quality-of-Service Specification	PKT-SP-DQOS-I10-040721	CableLabs
	PacketCable Network-Based Call Signaling Protocol Specification	PKT-SP-EC-MGCP-I10-040402	L
	PacketCable Event Message Specification	PKT-SP-EM-I10-040721	CableLabs
	PacketCable Internet Signaling Transport Protocol (ISTP) Specification	PKT-SP-ISTP-I02-011221	CableLabs
	PacketCable MTA MIB Specification	PKT-SP-MIB-MTA-I09-040402	CableLabs

CISCO BTS 10200 HARDWARE SPECIFICATIONS

Table 6 gives specifications of the Cisco BTS 10200 Softswitch.

Table 6. Specifications of Cisco BTS 10200 Softswitch

Configuration	Number of Boxes	CPU per Box	Memory Per Box	Disks Per Box
Sun Netra 240	4	2 @ 1280 MHz	8 GB	2 x 73 GB
Sun Netra 440	4	4 @ 1280 MHz	8 GB	4 x 73 GB
Sun Netra 1280	4	4–12 @ 1200 MHz	8–24 GB	2 x 73 GB

REGULATIONS (MEETS OR EXCEEDS REQUIREMENTS)

Safety

UL 1950 Third Edition, CCA C22.2 No. 950, TUV EN 60950, CB scheme with nordic deviations EMKO-TSE (74 SEC) 203, ZH1/618, and GR 1089-CORE

RFI/EMI

FCC Class A, EN 55022 Class A, EN 61000-3-2, and GR-1089-CORE

Immunity

EN 50082-1 and GR-1089-CORE

Certification

NEBS, Bellcore SR-3850 First edition, Level 3 (mission critical), and UL

ORDERING INFORMATION

To place an order, visit the Cisco Ordering Home Page.

For more information about Cisco voice solutions, visit: http://www.cisco.com/go/sp-voice

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FOR MORE INFORMATION

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